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ABSTRACT

This interim report is part of a longitudinal study of developmental behavior designed to determine whether infants from culturally disadvantaged homes have different developmental patterns than infants from advantaged homes. Twenty six culturally disadvantaged infants were individually evaluated on the Bayley Scale of Infant Mental and Motor Development and the Bayley Infant Behavior Profile at 1, 2, 3 and 6 months of age. The mother of the infant and a special evaluator/observer were present as each baby was evaluated. The resulting mental, motor and behavior data indicated average to above average mental and motor quotients and "normal" early behavior patterns. Since older disadvantaged children perform at subnormal levels on standardized tests, it was noted that these data highlight the second and third years of life as crucial to the development of patterns related to intellectual development. (NH)

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Developmental-behavioral Patterns in Twenty-six Culturally Disadvantaged Infants

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Developmental evaluation of infants can be greatly facilitated by systematic observational schedules of active and reactive behaviors in infants. Such schedules have been used since 1930 with some degree of success in making predictions of later levels of intelligence and parcelling out infants with decelerating developmental curves from the "normal" population. However, early developmental behavioral patterns have been seen to be extremely variable and measures developed for the assessment of this variability have been notoriously unreliable and unpredictive (Stott and Ball, 1965). Still, the use of observational techniques persists because of the lack of a communication capability in the pre-language child and an increased sophistication and use of such schedules as we become aware of the importance of the very early months of development for later cognitive function. Because of this a systematic observational program has been set up within the Education Improvement Program in its Infant Evaluation Project.

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In this Project 36 infants from culturally disadvantaged homes were identified during the first ten to twenty days of life for inclusion in a longitudinal study of developmental behavior patterns. One of the fundamental questions posed in the Project is whether or not the infant from the culturally disadvantaged home has a different mental, motor or developmental pattern as compared with the infant from the advantaged home.

The instrument of choice for assessing the development of these infants was the Bayley Scale of Infant Mental and Motor Development and its Infant Behavior Profile (Bayley, 1967). Each child is evaluated individually in the presence of his mother at one month of age and at two, three, six, nine, twelve, fifteen, eighteen, twenty-one and twenty-four months of age. This is an interim report of the results of mental, motor and behavior development of twenty-six infants at one, two, three and six months of age.

Subjects and Procedure

Twenty-six infants (fourteen boys and twelve girls) from disadvantaged homes in Durham, North Carolina were evaluated, using the Bayley Scales at one, two, three and six months of age. Evaluations took place in a separate room in a Pediatric Out-Patient Clinic and were observed by the mother and a special evaluator/observer. Infants were seen, for the most part, in the morning and immediately upon their arrival at the clinic so that no prolonged waiting room experience would disturb or sound sate the infants. Developmental Intelligence Quotients (DIQ), Developmental Motor Quotients (DMQ) and Behavior Profile Scores were derived at a point within five days of the monthly birth

date of the infant at each of the four month levels by the same evaluator. The Infant Behavior Profiles were accomplished as a pooled judgment by the evaluator assigned to that infant and an observer who witnessed each infant evaluation of mental and motor skills through a one-way screen.

Results and Discussion

Since infants entered the study at different intervals, six month data are reported on 22 of the 26 infants, three month data on 25 of the 26, two month data on 25 of the 26 and one month data on all 26.

Table 1 indicates the Mean DIQs for the number of infants indicated at each month level and sex group. It is interesting to note that the boys start out at a relatively high level compared to the Mean DIQ of 100 and after a short spurt at the second month level, dropped near the Mean by the sixth month evaluation. The girls, on the other hand, start below the Mean at 97 and move quickly at the second month evaluation into a position approximately one standard deviation above the Mean. They hold that position through the sixth month evaluation.

(Table 1 about here)

An inspection of Table 2, the Mean Developmental Motor Quotient data, suggests that both boys and girls start out considerably above the Mean of the standardization sample and drop toward the Mean as age progresses. There is a slight increase from the first to the second month for the boys but it joins the level of the girls' performance by the third month. This suggests

that there is a slight but noticeable drop from the 30-day level in developmental motor performance on a standardized scale compared with a middle-class standardization sample and that these infants are approaching the Mean of the distribution by the sixth month. The boys appear to be slightly more active and more productive on the motor scales while the girls are more productive and appear to be more capable on the developmental intelligence scales.

(Table 2 about here)

Table 3 indicates Bayley Infant Behavior Profile data on the 26 infants at one month of age, 25 infants at two months of age, 25 infants at three months and 22 at six months of age. The code numbers indicate the number of the item on the Behavior Profile as published by the Psychological Corporation. The Area indicates the area of interest probed by the item and the examiner and describes the general behavioral characteristic more specifically described under the heading of Characteristics. Each of the items is a rank judgment on a 1 to 5 or 1 to 9 point scale. The width of the scale is indicated under Rank Scale heading. The poles of the Rank Scale are indicated under Poles, the left-hand description, for example "none," indicates the rank of 1 and the right-hand label, for example, "much," indicates a ranking of 9.

(Table 3 about here)

An investigation of the Behavior Profile data suggests that some characteristics are fairly stable across the first six months of development in this

infant population. Item A-1, Social Orientation-Response to Persons, varies between 5 and 6 on the 9-point scale across the first six months. Item B-4, Object Orientation-Response to Objects, varies from 2.8 to 5.5 across the six month span suggesting a movement from low response to high response as age increases. Item C-7, Goal Directedness, appears to increase slightly during the first six months while F-10, Activity, varies only slightly around the region 4 to 5. Item H-15, Tension, appears to drop slightly between one and six month evaluation as does Item I-16, Fearfulness.

Items in area L, Sensory Areas of Interest Displayed, are of particular interest in this population. L-22 indicates a slight increase in looking behavior across the six month span, as does Item L-23, Increase in Listening Behavior. There is a slight drop in vocal sound production while there is an initially low manual sound production which peaks greatly at the sixth month. Item L-28a suggests that mouthing is fairly consistent across the six month span.

The areas in which increases seem to take place across the six month span are Response to Objects, Goal Directedness, Persistence, Cooperativeness, Happiness, Endurance, Looking, Listening, Banging with Hands, Manipulating and Mouthing. The areas in which decreases take place across the six month span are Energy Level, Tension, Fearfulness, Vocalization and Body Motion.

It would appear that many of the items in this profile are directly affected by maturation and motor development. This needs to be taken into account in the interpretation of sharp changes in such things as fine motor development, non-verbal sound production and persistence which are highly related to a child's motor capabilities and state of physical growth and development.

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It is of primary interest to note that these infants are at or above the Mean in both "mental" and motor performance as compared with a non-disadvantaged standardization sample. This is not the pattern for older, post-language age disadvantaged children. Low performance levels noted in four- and five-year-old disadvantaged children suggest that the period of decline has already "set in." Since average and above performances are noted during the first year, that leaves a heavy indictment of years two and three. Therefore, these data may serve to document further the notions of Bayley (1966) and others that the second and third years of life are the most affected by environmental and other factors crucial to normal development.

Summary

An interim report was made on a longitudinal study of culturally disadvantaged infants. Mental, Motor and Behavior Profile data were obtained at one, two, three and six months of age on fourteen boys and twelve girls.

Data indicated average to above mental and motor quotients and "normal" early behavioral patterns. Since older disadvantaged children perform at subnormal levels on standardized tests, it was noted that these data may serve to "bracket" the second and third years of life as critical to the development of patterns related to intellectual development.

References

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Table 1.

Mean Bayley DIQ Data of Twenty-six Infants by Sex and Age at Evaluation

	AGE AT EVALUATION			
	1 MONTH	2 MONTHS	3 MONTHS	6 MONTHS
BOYS	108	113	109	102
(N)	(14)	(13)	(13)	(11)
GIRLS	97	113	114	110
(N)	(12)	(12)	(12)	(11)
BOYS AND GIRLS	104	113	112	106
(N)	(26)	(25)	(25)	(22)

Table 2.

Mean Bayley DMQ Data of Twenty-six Infants by Sex and Age at Evaluation

	AGE AT EVALUATION			
	1 MONTH	2 MONTHS	3 MONTHS	6 MONTHS
BOYS	117	121	113	108
(N)	(14)	(13)	(13)	(11)
GIRLS	117	115	113	104
(N)	(12)	(12)	(12)	(11)
BOYS AND GIRLS	117	118	113	106
(N)	(26)	(25)	(25)	(22)

Table 3.

Bayley Infant Behavior Profile Data

CODE	AREA	CHARACTERISTIC	RANK SCALE	POLES		MEAN RANKS/MONTHS 1 MONTH	2 MONTHS	3 MONTHS	6 MONTHS
A1	Social Orientation	Response to Persons	1-9	None	Much	5.1	6.5	5.5	6.0
A2	" "	Response to Examiner	1-5	Avoid	Invite	3.0	3.4	3.3	3.5
A3	" "	Response to Mother	1-5	Avoid	Invite	3.3	3.5	3.6	3.5
B4	Object Orientation	Response to Objects: Toys	1-9	None	Much	2.8	3.6	3.7	5.5
B5	" "	Plays Imaginatively with Materials	1-2	Yes	No	1.9	2.0	1.9	1.9
B6a	" "	Attached to Specific Toy	1-2	Yes	No	1.8	2.0	1.7	1.8
B6b	" "	Relinquish Toy?	1-2	Yes	No	.8	.8	1.0	1.0
C7	Goal Directedness		1-9	None	Much	1.3	1.5	1.3	3.8
D8	Attention Span	Persistance in Attention	1-9	None	Much	2.9	3.9	3.9	5.0
E9	Cooperativeness	Negative/Positive Axis	1-9	Avoid	Invite	4.3	4.3	5.3	5.9
F10	Activity	Inactive/Vigorous Axis	1-9	None	Much	4.8	4.6	4.3	4.8
F11	"	Level of Energy	1-5	Low	High	3.1	2.9	2.8	2.9
F12	"	Coordination of Gross Movement	1-5	Smooth	Poor	2.6	2.7	2.9	2.8
F13	"	Coordination of Fine Movement	1-5	Smooth	Poor	2.4	2.8	3.2	2.9
G14	Reactivity	Sensitivity or Excitability	1-9	None	Much	4.5	4.9	4.4	5.0
H15	Tension		1-9	None	Much	4.0	4.3	3.8	3.5
I16	Fearfulness	Reaction to New or Strange	1-9	Accepts	Rejects	3.0	2.0	2.1	1.9
I17	"	Initial Response, Shyness	1-9	None	Much	1.2	1.2	1.2	1.3
I18	"	Later Responses	1-9	None	Much	2.2	2.4	2.3	2.8
J19	Emotional Tone	Unhappy/Happy Axis	1-9	None	Much	4.1	5.0	5.0	5.6
K20	Endurance	Behavior Constancy in Test	1-9	None	Much	4.2	5.4	5.8	6.3
K21	"	When Performance Best	1-9	Start	End	5.5	6.8	7.7	7.3
L22	Sensory Areas of Interest Displayed	Sight: Looking Around	1-9	None	Much	5.3	5.8	6.2	6.5
L23	"	Sounds: Listening	1-9	None	Much	4.8	5.1	5.0	5.6
L24a	"	Sounds: Producing Vocal	1-9	None	Much	4.7	4.7	4.7	4.0
L25b	"	Banging Toys or Hands on Table	1-9	None	Much	1.1	1.0	1.1	5.4
L26	"	Manipulating	1-9	None	Much	1.3	1.4	2.5	4.8
L27	"	Body Motion	1-9	None	Much	5.2	4.8	4.4	4.2
L28a	"	Mouthing: Sucking Thumb or Finger	1-9	None	Much	2.3	1.4	2.0	2.2
L29b	"	Mouthing: Pacifier	1-9	None	Much	2.8	1.8	2.1	2.7
L30c	"	Mouthing: Toys	1-9	None	Much	1.0	1.0	1.2	4.4